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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,347	01/31/2002	Hideki Ozawa	054160-5059	6053
9629	7590	11/12/2003	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			BOYD, JENNIFER A	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/059,347	OZAWA ET AL.	
	Examiner	Art Unit	
	Jennifer A Boyd	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1 page</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 15 - 27 in the Response dated August 8, 2003 is acknowledged. Claims 1 – 14 have been withdrawn.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 18 and 21 –22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 19 – 20, 22, 24 and 25 are rejected for being dependent on rejected claims 18 and 21.
4. Claim 21 is indefinite because it is unclear whether the sheet-like material is impregnated only once or is previously impregnated in claim 18. The use of the phrase “further impregnating” implies to the Examiner that the sheet-like material has already been impregnated once prior to claim 21. However, claim 18 states that the fiber-resistant material contains a polyimide binder resin for heat-resistant fibers. The independent claim 18 does not state the fiber-resistant material is impregnated by the polyimide binder. Therefore, the Examiner is confused as to if there are two impregnates and if the compositions of the impregnates are distinct. For the purposes of examination at this time, the Examiner will interpret the impregnate as at least one impregnate which meets the limitations as a “binder resin for heat-resistant fibers” and “heat-bonding

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polyimide” as specified by the Applicant. If more than one type of polyimide is present in the article, then the Applicant must further distinguish them.

5. Claim 22 is indefinite because it is unclear what is required by the claim. The claim recites the limitation “Ar<sub>2</sub> is an aromatic diamine residue comprising 1,3-bis(4-aminophenoxy)benzene or 1,3-bis(3-aminophenoxy) and p-phenylenediamine and/or diaminophenylether in a molar ratio of 10:90-100:0”. Are the aromatic diamine residue options:

Option 1: *1,3-bis(4-aminophenoxy)benzene OR 1,3-bis(3-aminophenoxy) and p-phenylenediamine and diaminophenylether OR diaminophenylether;*

Option 2: *1,3-bis(4-aminophenoxy)benzene OR 1,3-bis(3-aminophenoxy) and p-phenylenediamine OR 1,3-bis(3-aminophenoxy) and diaminophenylether?*

Please clarify the claim language.

### ***Claim Rejections - 35 USC § 102/103***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15 - 27 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hashimoto et al. (US 2002/0106521 A1).

Hashimoto et al. is directed to a thermosetting resin low-dielectric resin composition (Title).

As to claim 15, Hashimoto teaches a thermosetting low-dielectric polyimide resin composition comprising a tetracarboxylic acid dianhydride and diamine or diisocyanate (page 5, [0044]). Hashimoto teaches that a prepreg can be formed of a reinforcing fiber material impregnated with the resin composition (page 7, [0065]), which can serve as a binder for the heat-resistant fibers (page 7, [0062]). It should be noted that the limitation of "obtained from a water-soluble polyimide precursor" has not been given patentable weight because the precursor used to form the polymer is not germane to the issue of patentability of the polymer or structure comprising the polymer itself provided that the chemical and physical limitations of the final polymer product are met.

As to claim 16, Hashimoto teaches that the siloxane-modified polyimide resin composition preferably has a glass transition temperature of 140 degree Celsius or more (page 4, [0037]). It is known in the art that a glass transition temperature indicates the presence of at least a partially amorphous material.

As to claim 17, Hashimoto teaches a siloxane-modified polyimide resin composition comprises 2,3,3',4'-biphenyltetracarboxylic acid dianhydride as the tetracarboxylic acid dianhydride component (page 5, [0044] and [0047]). Hashimoto does not suggest the combination of two or more tetracarboxylic acid dianhydride materials, therefore, it is assumed

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that 100% of the tetracarboxylic acid dianhydride component comprises 2,3,3',4'-biphenyltetracarboxylic acid dianhydride.

As to claim 18, Hashimoto teaches a thermosetting low-dielectric polyimide resin composition comprising a tetracarboxylic acid dianhydride and diamine or diisocyanate (page 5, [0044]). Hashimoto teaches that the siloxane-modified polyimide resin composition can additionally contain a reaction promoter comprising 1,2-dimethylimidazole or 1-methyl-2-ethylimidazole (page 7, [0062]). Hashimoto teaches that a prepreg can be formed of a reinforcing fiber material impregnated with the resin composition (page 7, [0065]), which can serve as a binder for the heat-resistant fibers (page 7, [0062]).

As to claim 19, Hashimoto teaches that the siloxane-modified polyimide resin composition preferably has a glass transition temperature of 140 degree Celsius or more (page 4, [0037]). It is known in the art that a glass transition temperature indicates the presence of at least a partially amorphous material.

As to claim 20, Hashimoto teaches a siloxane-modified polyimide resin composition comprises 2,3,3',4'-biphenyltetracarboxylic acid dianhydride as the tetracarboxylic acid dianhydride component (page 5, [0044] and [0047]). Hashimoto does not suggest the combination of two or more tetracarboxylic acid dianhydride materials, therefore, it is assumed that 100% of the tetracarboxylic acid dianhydride component comprises 2,3,3',4'-biphenyltetracarboxylic acid dianhydride.

As to claim 21, Hashimoto teaches that a prepreg can be formed of a reinforcing fiber material impregnated with the resin composition (page 7, [0065]), which can serve as a heat-bonding polyimide. It should be noted that the Examiner has interpreted the polyimide which

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serves as a “binder for heat-resistant fibers” and the polyimide which serves as heat-bonding polyimide as the same impregnate because it meets the physical and chemical limitations as set forth by the Applicant.

As to claim 22, Hashimoto teaches a thermosetting low-dielectric polyimide resin composition comprising a tetracarboxylic acid dianhydride and diamine or diisocyanate (page 5, [0044]). Hashimoto teaches that a prepreg can be formed of a reinforcing fiber material impregnated with the resin composition (page 7, [0065]), which can serve as a heat bonding component. Hashimoto teaches that the tetracarboxylic acid dianhydride component can comprise 2,3,3',4'-biphenyltetracarboxylic acid dianhydride (page 5, [0044] and [0047]). Hashimoto does not suggest the combination of two or more tetracarboxylic acid dianhydride materials, therefore, it is assumed that, in one embodiment, 100% of the tetracarboxylic acid dianhydride component comprises 2,3,3',4'-biphenyltetracarboxylic acid dianhydride and 0% comprises 3,3',4,4'-biphenyltetracarboxylic dianhydride. Hashimoto teaches that the diamine component can be 1,3-bis [1-(4-aminophenyl)-1-methphenyl] benzene which is a type of 1,3-bis(4-aminophenoxy) benzene. Hashimoto does not suggest the combination of two or more diamine materials, therefore, it is assumed that, in one embodiment, 100% of the diamine component comprises 1,3-bis [1-(4-aminophenyl)-1-methphenyl] benzene.

As to claim 23, Hashimoto teaches a thermosetting low-dielectric resin polyimide composition comprising a tetracarboxylic acid dianhydride and diamine or diisocyanate (page 5, [0044]). Hashimoto teaches that a prepreg can be formed of a reinforcing fiber material impregnated with the resin composition (page 7, [0065]), which can serve as a binder for the heat-resistant fibers and a heat-bonding polyimide. It should be noted that the limitation of

“obtained from a water-soluble polyimide precursor” has not been given patentable weight because the precursor used to form the polymer is not germane to the issue of patentability of the polymer or structure comprising the polymer itself provided that the chemical and physical limitations of the final polymer product are met.

As to claims 24 - 27, Hashimoto teaches a metal film, specifically a copper film, can be applied to the resin surface (page 8, [0073]).

As to claims 15 and 23, although Hashimoto does not explicitly teach the claimed retaining at least 70% of its tensile strength when left in an environment at 200 degrees Celsius for one hour as required by claim 15 and a polyimide with a thermal decomposition temperature of 500 degrees Celsius or higher and a breaking elongation of 15% or greater when shaped into a film as required by claim 23, it is reasonable to presume that the heat-resistant fiber impregnated material retains at least 70% of its tensile strength when left in an environment at 200 degrees Celsius for one hour as required by claim 15 and a polyimide with a thermal decomposition temperature of 500 degrees Celsius or higher and a breaking elongation of 15% or greater when shaped into a film as required by claim 23 is inherent to Hashimoto. Support for said presumption is found in the use of like materials (i.e. a heat resistant fiber polyimide-impregnated material) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of that the heat-resistant fiber impregnated material retains at least 70% of its tensile strength when left in an environment at 200 degrees Celsius for one hour as required by claim 15 and a polyimide with a thermal decomposition temperature of 500 degrees Celsius or higher and



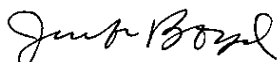
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a breaking elongation of 15% or greater when shaped into a film as required by claim 23 would obviously have been present once the Hashimoto product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Jennifer Boyd  
October 23, 2003

  
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